

WHAT IS CLAIMED IS:

1. A liquid crystal display comprising:

a liquid crystal display panel which has a plurality of pixels arranged in a matrix type in areas determined by a plurality of gate lines and a plurality of data lines crossing the gate lines.;

a gate driver which applies a gate on voltage to one of the gate lines sequentially thereby scanning the pixels in the liquid crystal display panel by a row;

a source driver which receives a plurality of gray voltages and a video signal and selects the gray voltage corresponding to the video signal and applies the selected gray voltage to the data lines of the liquid crystal display panel;

a gray voltage generator which generates a plurality of the gray voltages from data supply voltage and provides the gray voltages to the source driver; and

a multiple output DC/DC converter which induces a transformer, receives a DC input voltage and generates main supply voltage from a primary coil of the transformer and at least two more auxiliary supply voltages from a secondary coils of the transformer wherein the main supply voltage is used as the data supply voltage, the auxiliary supply voltages are used as the gate on voltage and a gate off voltage.

2. The liquid crystal display according to claim 1, wherein the multiple output DC/DC voltage converter comprises:

the transformer which includes a primary coil having one terminal

applied with the DC input voltage and at least two more secondary coils;

a switch which is connected to the primary coil of the transformer, turns on/off responsive to a switching signal and consequently causes the current of the primary coil to change;

5 a plurality of diodes which are connected to the primary coil and the secondary coils respectively and rectify voltages generated in the each coil; and

a plurality of capacitors which are connected to the each diode, are charged by the rectified voltage to generate constant voltages.

10 3. The liquid crystal display according to claim 2, wherein the constant voltage generated from the capacitor connected to the primary coil is output as the data supply voltage and the constant voltages generated from the each capacitor connected to at least two more the secondary coils are output as the gate on voltage and the gate off voltage.

15 4. The liquid crystal display according to claim 3, wherein the magnitude of the constant voltage generated from the capacitor connected to the primary coil is determined by on/off duty ratio of the switch and the magnitude of the constant voltages generated from the capacitors connected to the secondary coils are determined by the winding number of the secondary coils.

20 5. The liquid crystal display according to claim 2, wherein the multiple output DC/DC voltage converter further comprises a switch control circuit for generating the switch signal.

6. The liquid crystal display according to claim 1, wherein the multiple output DC/DC voltage converter comprises:

an inductor having one terminal applied with the DC input voltage;

a transformer which has a primary coil connected in parallel to the inductor and at least two more secondary coils;

a switch which is connected to the other terminal of the inductor, turns on/off responsive to a switch signal and consequentially causes the current of the primary coil to change;

a plurality of diodes which are connected to the inductor and the secondary coils, respectively and rectify voltages generated in the inductor and the secondary coils; and

a plurality of capacitors which are connected to the each diode, are charged by the rectified voltages to generate constant voltages.

7. The liquid crystal display according to claim 6, wherein the constant voltage generated from the capacitor connected to the primary coil is output as the data supply voltage and the constant voltages generated from the each capacitor connected to at least two more the secondary coils are output as the gate on voltage and the gate off voltage.

8. The liquid crystal display according to claim 7, wherein the magnitude of the constant voltage generated from the capacitor connected to the primary coil is determined by on/off duty ratio of the switch and the magnitude of the constant voltages generated from the capacitors connected to the secondary coils are determined by the winding number of the secondary coils.

9. The liquid crystal display according to claim 6, wherein the multiple output DC/DC voltage converter further comprises a switch control circuit for

generating the switch sign

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D3

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